Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

www.mnnps.org

Volume 35 Number 1 **Spring 2016**

Minnesota Native Plant Society
A non-profit organization dedicated to the conservation and appreciation of Minnesota's native plants and plant communities through education and public awareness.

Monthly meetings

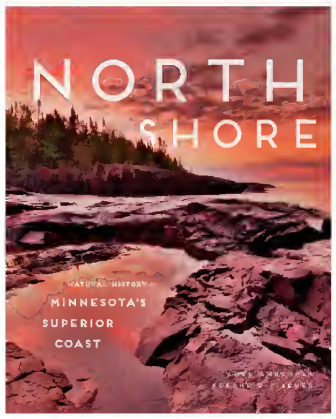
Thompson Park Center/Dakota Lodge
Thompson County Park
1200 Stassen Lane
West St. Paul, MN 55118

First Thursday of the month, October-December & February-June. Social period begins at 6:30 p.m. and the meeting runs from 7-9 p.m. Check at www.mnnps.org for more program information.

Monthly Programs – Spring 2016 Upcoming

May 5: Anna Gerenday, Mycologist, University of Minnesota. Talk: **Looking for Mushrooms. Building the Minnesota Mycota**. Plant of the Month: Speckled alder (*Alnus incana)*.

June 2: Chel Anderson, Ecologist, MN DNR. Author of recently released North Shore, Minnesota's Superior. Talk: **Nature and Culture: the MN North Shore's ancient, still unfolding stories.** Plant of the Month: Northern paintbrush (*Castilleja septentrionalis)*.



Book Signing

The Society has purchased a number of Chel's book, North Shore, Minnesota's Superior for the June meeting. Those who purchase the book will have the opportunity to have their book signed by the author.

Wild Rice in Minnesota: Recent Research on Habitat Requirements

This is a summary of the presentation made at the February meeting by *Edward Swain*, Research Scientist, Minnesota Pollution Control Agency (MPCA)

Minnesota's wild rice is *Zizania palustris*, one of four species in the genus. *Zizania* is in the same group of grasses as *Oryza*, which is the genus containing cultivated white rice. *Zizania palustris* has often been confused with *Z. aquatica*, which hasn't been recorded in Minnesota since herbarium specimens were collected in 1899 in the lower Mississippi River. *Z. aquatica* is found from Wisconsin to the Atlantic coast, and is found in freshwater tidal wetlands from New England south to Florida and the Gulf coast. The other two species of *Zizania* are interesting: *Z. texana*, an endangered species with about 200 individuals, only exists in the headwaters of the San Marcos River of Texas. *Z. latifolia* is native to Asia, and for at least the last 1,000 years has been cultivated for the consumption of its stems that are infected with a smut fungus. Unlike *Z. palustris* and *Z. aquatica*, which are annuals that make many seeds, *Z. texana* and *Z. latifolia* are perennials that rarely go to seed. Wild rice seeds fall into the water when mature and sink into the mud. Seeds lose viability if the soil dries out. All wild rice species grow in the water-saturated soil of wetlands, which results in a dramatically different habitat than is experienced by terrestrial plants. One big difference is that oxygen is not very soluble in water, and is essentially zero in the water-saturated soil. Even though the photosynthetic parts of plants make oxygen during the day,

Continued on Page 3

Society Leadership

Board members' names are followed with the year their term expires in parentheses.

President: Mike Lynch

Vice President: Shirley Mah Kooyman

Secretary: Scott Milburn

Treasurer & Membership: Ron & Cathy Huber

Board Member: Ken Arndt (2019)

Board Member: John Arthur (2018)

Board Member: Tom Casey (2017)

Board Member: Steve Eggers (2018)

Board Member: Otto Gockman (2017)

Board Member: Mike Lynch (2017)

Board Member: Scott Milburn (2018)

Board Member: Welby Smith (2019)

Board Member: Jyneen Thatcher (2016)

Conservation Chair: Tom Casey

Field Trip Chair: Ken Arndt

Program Chair: Jyneen Thatcher

Publications Chair: Open

Symposium Chair: Otto Gockman

Website: Katy Chayka

MNNPS Board of Directors News

Tom Casey has joined the board to fill the board vacancy through 2017. Additionally, board member elections took place in March at the monthly meeting. Ken Arndt and Welby Smith were re-elected while Simba Blood was elected to take the third open board position. Simba's term will begin in June at the next quarterly board meeting.

MNNPS Membership Positions

You do not need to be a member of the board to contribute your time and skills. We always need field trip ideas and leaders as well as hospitality and logistics at monthly meetings. Ideas for monthly speakers are always welcome. At this time we are seeking a newsletter editor. We are preferably looking for someone who can write content in line with our mission as well as seek out writings from our membership. As you are aware, the newsletter is an integral part of the Society, serving to not only inform our membership about the goings-on of the Society, but also to educate the membership.

Society News:

Proposed change to the Articles of Incorporation

The Society's Board of Directors is often in a position that it must conduct business outside of normally scheduled quarterly board meetings. Minnesota Statute 317A.239 requires unanimous consent by all board members in order for a motion to pass when voted on outside of physical meeting. (This is termed an "action without a meeting.") However, this same statute allows the Society to amend our Articles of Incorporation to allow for a simple majority vote when an action is requested without meeting. This will allow the Society to conduct business more efficiently on matters that require immediate action, such as letters of support on conservation items, for example. Therefore, the following resolution will be brought forth to the membership for a vote at the monthly meeting in May 5, 2016

Resolution – Amend Articles of Incorporation

Whereas, the Members of the Minnesota Native Plant Society, Inc. desire to allow the Board of Directors more flexibility in making decisions between meetings of the Board of Directors;

Whereas, Minnesota Statute 317A.239 requires a unanimous vote of the Board of Directors for "actions without a meeting", unless the Articles of Incorporation allow less than a unanimous vote;

Now, therefore, **BE IT RESOLVED** that the Members of the Minnesota Native Plant Society, Inc.

1. Approve an amendment to the Articles of Incorporation to state: "Any action permitted to be taken at a meeting of the Board of Directors may be taken by written action, signed or consented to by electronic communication, by a simple majority of all Directors."
2. Authorizes the President to file this amendment with the Minnesota Secretary of State in the manner required by law.

Membership Categories:

- Individual or family $15
- Student or senior $8
- Institution $20
- Lifetime $300

Wild Rice cont. from **Page 1**

all plant parts need to respire oxygen 24 hours a day, including the roots extending down into the anoxic mud. Aquatic plants have special hollow passageways, called aerenchyma, that transport air down to the roots.

Not only is oxygen essentially zero in the mud, but the lack of oxygen produces a cascade of microbial and chemical changes that require specialized adaptations on the part of wetland plants. Iron, which in oxygenated terrestrial soils can be so unavailable as to limit plant growth, goes into solution in anoxic saturated soils at concentrations that would be toxic to most terrestrial plants. The dissolution of iron releases phosphate bound to the iron so that wetland plants, including wild rice, are rarely limited by iron or phosphorus. Nitrogen is usually the limiting nutrient.

Wetland soils can contain appreciable amounts of decaying plants, which presents an opportunity for bacteria that degrade organic matter, such as the roots and straw produced annually by wild rice. Without oxygen, bacteria "breathe" or respire other chemicals, including iron and sulfate. Bacterial respiration of iron simply puts iron into solution, but respiration of sulfate produces hydrogen sulfide, which accounts for the odors often released when one walks through a wetland.

Hydrogen sulfide is very reactive with metals, which accounts for its potential toxicity to animals and plants that live in wetland soil, since all organisms have iron-containing essential enzymes that are denatured by elevated hydrogen sulfide. However, wetland organisms, including wild rice, may be protected from the toxic effects of hydrogen sulfide if the wetland soil contains enough iron to remove hydrogen sulfide from solution. Some wetland plants may also release oxygen from the aerenchyma in their roots to detoxify hydrogen sulfide by converting it back into sulfate.

All plants have basic habitat requirements that include water, light, and physical space. Perennial plants, such as lily pads, can dominate the physical space and light availability in a wetland, making it impossible for wild rice to grow. Some aquatic systems have too little transparency for any rooted plants to grow up from the bottom, a situation that can be caused by nutrient pollution that allows a high density of suspended algae.

Recent research sponsored by the MPCA found that wild rice can grow in a wide variety of aquatic habitats, so long as there is space, clear water, and sufficiently low concentrations of hydrogen sulfide. Some perennial plants, such as lily pads, seem to be more tolerant of hydrogen sulfide. Even though hydrogen sulfide is produced from sulfate in the overlying water, field studies do not find a strong correlation between the two chemicals. The net amount of hydrogen sulfide not only depends on the concentration of sulfate in the water, but also on the soil's concentrations of organic matter and iron.

The habitat requirements of wild rice are, then: physical space, clear water, and a saturated soil that has relatively low concentrations of hydrogen sulfide. Hydrogen sulfide is necessarily low if sulfate is very low, but also can be low when sulfate is high if the ratio of iron to organic matter in the soil is sufficiently high.

A Note about Membership Costs

The Plant Society is a non-profit organization and as such we try to keep our membership rates low to be inclusive of everyone regardless of their ability to pay. We are all volunteers and work hard to keep our costs as low as possible and yet provide our membership with quality programs, news, etc.

Right now the cost of simply printing and mailing four hard copy newsletters and eight meeting reminder postcards is about $15.67 per year per membership. To send the same information electronically is roughly $0.93 per year per membership. You can see that the costs for hardcopy exceed not just our $8 student/senior rates but also our standard $15 membership. This is currently acceptable to us as we do not want to exclude anyone based upon their lack of a computer or funds. These costs are covered by donations, the rates paid by members who receive communications electronically, and other fund-raising activities.

It does, however, limit our ability to do some of the other things that we desire (contributing toward publication of books, purchasing microscopes for the University Herbarium, etc.). We do NOT intend to raise our rates in the near future but we hope that those who are willing and able to pay the regular rates will do so and that everyone that is able to receive newsletters and reminders by e-mail will do so. Many thanks to ALL of our members for their support.

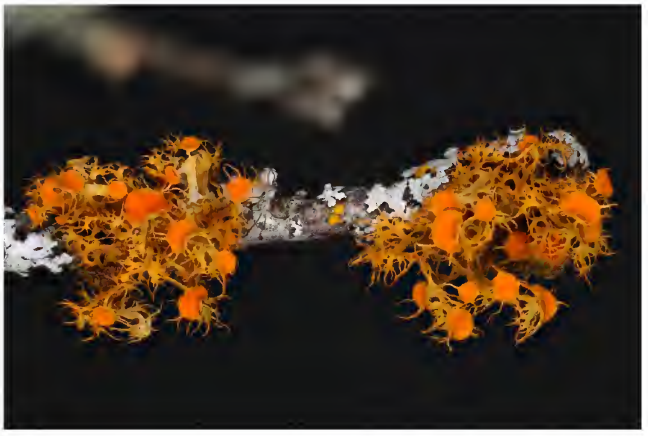
Lichen Profile: Gold-eye lichen

Otto Gockman

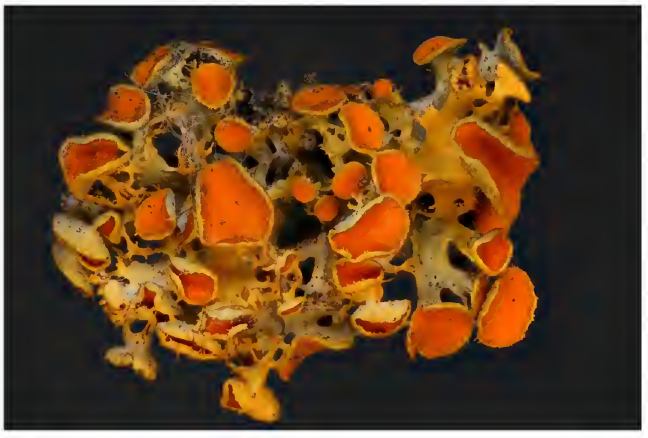
Gold-eye lichen (*Teloschistes chrysophthalmus*) is a fruticose (shrub-like) species of well-lit sites. The species is typical of the Great Plains and Mexico where it grows on the branches of small trees and shrubs in indirect to direct sunlight. Elsewhere the species occurs in scattered locations in both eastern and western North America. In western North America, the collection record for gold-eye lichen indicates that the species is abundant to common in the Baja Peninsula but decreases in abundance as you move north into California. It is sporadic across its eastern range, although many of these records are historical. According to James and Patricia Hinds in their book Macrolichens of New England, the species is thought to be extirpated from New England. In reference to this species and other closely related taxa, Irwin Brodo writes, in his book Lichens of North America, "the species [has] been eliminated over parts of [its] former range, especially in the northeast, because of habitat destruction and air pollution". Records from the Consortium of North American Lichen Herbaria suggest that only a handful of collections of the species has been made from the northeastern United States since 1950! Gold-eye lichen is listed as a species of special concern in Wisconsin, where only three collections have been made since 1950.

In Minnesota, gold-eye lichen appears to be fairly secure, though its distribution follows the overall distribution trend seen elsewhere in North America, with the majority of records being from the Prairie Province in the western tier of counties and a few scattered sites in the northern and eastern parts of the state (see map). In 2015, John Thayer discovered a population of gold-eye lichen in Cottage Grove. This recent discovery is significant because of the species' apparent sensitivity to air pollution. John's collection was made from the trunks of staghorn sumac (*Rhus typhina*) in a public park, a substrate which is common in the greater Twin Cities metro area. I encourage readers to keep an eye out for this species as they explore natural areas throughout the state, but be especially watchful around the Twin Cities. The species is easy to recognize and identify in our region since it is the only fruticose lichen species with an orange thalus (lichen body) that we have, though this coloration may be limited to the area immediately around the apothecia (the cup-shaped "fruiting" structure).

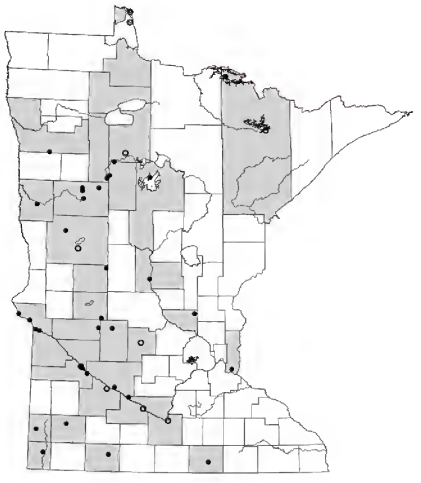
If you want to see this species in the wild, I recommend searching the spruce (*Picea* spp.) and balsam firs (*Abies balsamea*) along the shore of Lake Itasca in Itasca State Park; the species seems to be particularly abundant in this area!



Teloschistes chrysophthalmus



Teloschistes chrysophthalmus, photos courtesy of Otto Gockman and Minnesota Wildflowers



Distribution Map of *Teloschistes chrysophthalmus*, courtesy of John Thayer

What, exactly, is a bulrush?
Welby Smith

First, a bulrush is not a rush at all - it's a sedge, which means it's in the family Cyperaceae. Rushes are in the family Juncaceae. The two families are closely related, but they're not the same thing. Hence my preference for the name "bulsedge", which I hope will catch on. People who learned their plants in the 1980's or 90's, like I did, learned that bulrushes are in the genus *Scirpus*. We learned that Minnesota had 27 species of *Scirpus*, and we worked hard to learn them all.

Since then, science has stirred the pot by reassigning our bulrushes to 5 separate genera, and given them names that most people have never heard of. The little ankle-high clumped bulrushes are now in the genus *Trichophorum*; the big river bulrush is in the genus *Bolboschoenus*; the leafless round-stemmed bulrushes are in the genus *Schoenoplectus*; the dwarf annual bulrushes are in the genus *Schoenoplectiella*; the leafy perennial bulrushes were left in the genus *Scirpus*. Trust me, this all makes sense.

I feel an affinity for all the bulrushes, wherever science has put them, but my favorites are probably the round-stemmed bulrushes now called *Schoenoplectus* (see me in person and I'll tell you how to pronounce it). There are three in particular that I would like to tell you about. Many people already know two of them, or think they do; the conveniently named soft-stemmed bulrush (*Schoenoplectus tabernaemontani*) and hard-stemmed bulrush (*Schoenoplectus acutus*). The third one is called slender bulrush (*Schoenoplectus heterochaetus*). It's one that everyone should know, but practically no one does.

Before I proceed, I will address the unasked question: What's the big deal about bulrushes? If you follow natural resource issues you will probably know that bulrushes are rapidly disappearing from lakeshore habitats, and no one is quite sure why. This is a concern to wildlife and fisheries biologists because bulrushes are key habitat components for fish and waterfowl.

Preservation and restoration efforts invariably focus on soft-stemmed and hard-stemmed bulrush with no attention paid to the lesser known, and less common, slender bulrush. For the sake of my science, I would like to change that.

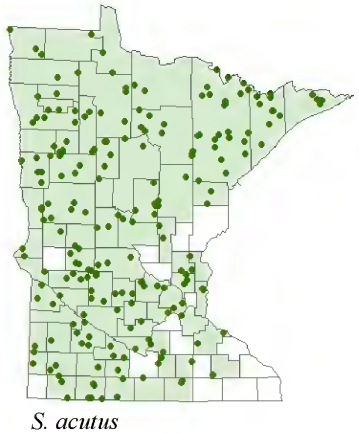
The following key is adapted from a much larger project I am working on and is rather technical. The only essential thing to know is that spikelets are the individual clusters of flowers. The photos might help.

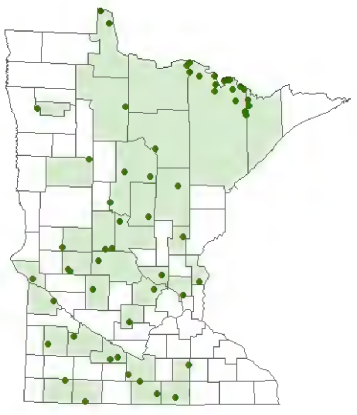
1. All spikelets solitary at the ends of distinct branches; achenes 2.5-3 mm long, trigonous (3-sided in cross-section) _____ Slender bulrush (*S. heterochaetus*)

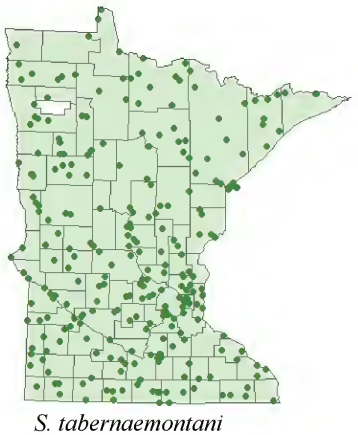
1. At least some spikelets in clusters of 2-8 at the ends of branches; achenes 1.8-2.5 mm long, plano-convex (2-sided in cross-section).

    2. Inflorescence 5-15 cm long, with 30-200 spikelets, many (30% +) of the spikelets solitary, the rest in clusters of 2-3; stems soft, easily compressed _____Soft-stemmed bulrush (*S. tabernaemontani*)

    2. Inflorescence 2-8 cm long, with 10-40 spikelets, few if any (5-10%) of the spikelets solitary, most in clusters of 2-8; stems firm _____ Hard-stemmed bulrush (*S. acutus*)


S. acutus


S. heterochaetus


S. tabernaemontani

The *National Wetland Plant List* – What is it and What is it Used For?

Steve Eggers

Anyone not involved in the wetland regulatory arena may be unaware of an on-line resource containing a wealth of information on vascular plants that occur in wetlands of the United States. The *National Wetland Plant List* had its origin in the 1980s, a period that saw an explosion of interest in identifying and delineating wetlands for state and federal regulatory programs. A definition and method for identifying "wetland vegetation" was needed – one that would stand up to the rigors of the regulatory arena.

As part of the National Wetland Inventory undertaken by the U.S. Fish and Wildlife Service (Service), a wetland plant list was developed by the Service in cooperation with Federal interagency review panels. The list was published in 1988 (1988 List) and became an essential tool for delineating wetlands. Responsibility for the list was transferred to the U.S. Army Corps of Engineers in 2006. An extensive effort to update the 1988 List ensued and involved regional panels of botanists/plant ecologists, oversight by a national panel of experts, and a national public notice and comment period. The update was published in 2012 as the *National Wetland Plant List* (NWPL). The NWPL employs 10 regions (Figure 1 shows the seven regions in the Lower 48) to account for different ecological/climatological/geological factors across the United States. Minnesota lies within three of the regions: Great Plains, Midwest, and Northcentral/Northeast. Minor updates to the NWPL followed in 2013 and 2014 and currently a 2015 update is in process.

While cattails (*Typha* spp.), bulrushes (*Schoenoplectus* spp., *Scirpus* spp.) and water-lilies (e.g., *Nymphaea* spp., *Nuphar* spp.) are obvious wetland plants, what about plant species that occur in areas transitional between wetlands and uplands, or species that occur with equal frequency in both wetlands and uplands (e.g., red maple (*Acer rubrum*))? The NWPL assigns one of five indicator statuses to a plant species depending upon its frequency of occurrence in wetlands (**Table 1**).

Cattails, bulrushes (bulsedges) and water-lilies mentioned in the previous paragraph are examples of **OBL** species. Examples of **FACW** species include blue vervain (*Verbena hastata*), reed canary grass (*Phalaris arundinacea*) and swamp white oak (*Quercus bicolor*). In addition to red maple, other examples of **FAC** species – which occur with more or less equal frequency in both wetlands and non-wetlands – include plains cottonwood (*Populus deltoides* ssp. *monilifera*) and curly dock (*Rumex crispus*). Canada thistle (*Cirsium arvense*), black cherry (*Prunus serotina*) and Indian

Table 1.	
Indicator Status	**Description**
Obligate (**OBL**)	Almost always occur in wetlands
Facultative Wetland (**FACW**)	Usually occur in wetlands but may occur in non-wetlands
Facultative (**FAC**)	Occur in wetlands and non-wetlands
Facultative Upland (**FACU**)	Usually occur in non-wetlands but may occur in wetlands
Upland (**UPL**)	Almost never occur in wetlands

grass (*Sorghastrum nutans*) are examples of **FACU** species. An example of an **UPL** species in the Northcentral/Northeast Region is common milkweed (*Asclepias syriaca*). The same plant species can have a different indicator status in a different region. Common milkweed is rated as FACU in the Midwest Region, for example. Plant species rated as UPL across all 10 regions are not included on the NWPL.

How is the indicator status applied for purposes of wetland delineations? Plant species rated OBL, FACW or FAC are considered wetland plants, or **hydrophytes** (hydro=water; phyte=plant). Plant communities dominated by hydrophytes – **hydrophytic plant communities** – meet the vegetation criterion for wetlands.

Currently, over 8,000 species are on the NWPL. Subsets of the NWPL by state or region can be downloaded as pdf. or xls. files. The web page for each species includes distribution maps, biological attributes, photographs, ink drawings, external web links, and synonyms (more than one scientific name for the same plant species).

The high volume of changes in nomenclature has caused frustration among wetland practitioners and others. Red-osier dogwood, for example, has had three scientific names applied in recent years: *Cornus stolonifera* Michx., *C. sericea* L. and the currently accepted *C. alba* L. The NWPL makes it easy to determine the currently accepted scientific name for a species. Using the search function, type in the scientific name for a plant species and regardless of whether the name you use is a synonym or the currently accepted scientific name, the NWPL will direct you to the web page for that species. I have received more than a few inquiries from wetland practitioners as to why the NWPL omitted a plant species known to occur in wetlands. Several involved *Rhamnus frangula* (glossy buckthorn). Type in *Rhamnus frangula* in the search function and the NWPL will direct you to the web page for *Frangula alnus*, the currently accepted name for glossy buckthorn.

The web page includes technical papers and even a video series on "All Things Wetland Plants." Google "national wetland plant list" or type in: wetland_plants.usace.army.mil

Scientific and Natural Areas Profile – Gully SNA

Scott Milburn

Anyone familiar with the Natural History magazine, knows of a column called This Land. The column first appeared in 1984 and was written by famed Midwestern botanist and MNNPS lifetime member Dr. Robert Mohlenbrock. This piece explored natural areas throughout the entire United States, giving the reader a glimpse of these special and unique places.

I was always inspired by these articles and thought this might be something we could do with a focus on our Scientific and Natural Areas (SNAs) for the Plant Press. I now have my chance and I hope to provide quarterly pieces exploring our SNAs. The initial goal will be to provide an ecological glimpse into each site that is covered. A secondary goal is to promote the program itself. This is a program that suffers at the hands of politicians who have differing agendas. The reality is that this program is not about us, but rather for future generations. It is there for us to appreciate and to protect.

The first SNA chosen happens to be one that I am very familiar with, Gully Fen SNA. This is one of the largest SNAs outside of the Peatland SNAs at greater than 1,600 acres. The site is located in eastern Polk County within the Tallgrass Aspen Parklands ecological province.

Officially designated in 1996, this SNA includes a complex mosaic of wet meadow, fire dependent forest, wet forest, forested peatland, and open peatland ecological systems. Of ecological importance are two particular native plant communities, the Tamarack Seepage Swamp, and the Prairie Extremely Rich Fen. The latter community is otherwise referred to as a calcareous fen. The Tamarack Seepage Swamp (FPw63b) community is for the most part unique to just this part of the state. The Gully region is where one can see a convergence of east and west, resulting in some rather intriguing plant associations. This particular community has a varying canopy in terms of cover with tamarack (*Larix laricina*) and occasional black spruce (*Picea mariana*) individuals. What is highly unusual is that sterile sedge (*Carex sterilis*) and Mistassini Primrose (*Primula mistassinica*), both strong calciphiles with great affinity for calcareous fens, are both present amongst other herbaceous species in this community type. Other prevalent calciphiles include shrubby cinquefoil (*Dasiphora fruticosa*) and sage-leaved willow (*Salix candida*). The other community subtype, Tamarack – Black Spruce Swamp (FPw63a), is also present at the Gully SNA. What is exciting about this community subtype is that there are a number of orchid species present including our state flower, showy lady's slipper (*Cypripedium reginae*) as well as two rare orchid species, ram's-head orchid (*Cypripedium arietinum*) and white adder's mouth (*Malaxis monophyllos*). Both species were recent observations and they both extend their known distribution in Minnesota.

Image of *Cypripedium arietinum* from Gully SNA, 2010.

The calcareous fens here are fairly small pockets within the entire SNA complex. These fens are typically saturated during the entire growing season, fed by calcium rich groundwater. The vegetation tends to be short-statured which includes sterile sedge along with hair-like beak rush (*Rhynchospora capillacea*), Sticky false asphodel (*Triantha glutinosa*), American grass-of-Parnassus (*Parnassia glauca*), beaked spike-rush (*Eleocharis rostellata*), and Twig-rush (*Cladium mariscoides*). One of the more intriguing botanical oddities is the presence of pitcher plants (*Sarracenia purpurea*). This species is most often associated with nutrient poor systems including open bogs and poor fens, but it is an important component of the fens of the Gully region, contributing to the uniqueness of this area.

Despite the SNA status, this SNA is vulnerable to a number of direct and indirect factors. Hydrology is the key to sustaining the ecological integrity of the various wetland communities present and therefore this requires oversight. The SNA includes several substantial drainage ditches that have been present since before the SNA designation, but the ditches continue to function as intended. In addition to direct hydrologic impacts are those indirect impacts related to dewatering activities with nearby gravel mining and agriculture. Water appropriations are a hot topic which pits local economics against conservation. The area is worthy of the upmost protection and this area is a must-see natural area attraction.

Plant Lore

Thor Kommedahl

What is Virginia cowslip?

It is *Mertensia virginica*, a native perennial in the borage family.

How did it get its names?

Mertensia was named after a German botanist F.C. Mertens and *virginica* refers to Virginia at a time in history when Virginia extended west to the Mississippi. "Cowslip" comes from an old- English word cuslyppe meaning cow dung probably because plants flourished in cow pastures.

Mertensia virginica, Images courtesy of Minnesota Wildflowers

What does the plant look like?
Bell-shaped flowers in small cymes are pink in bud and turn blue when opening. Strongly-veined leaves are smooth and elliptic to egg-shaped. Plants grow 1-2 feet tall. Four seeds reside in wrinkled nutlets.

Where does it grow?
It grows in moist woods and wet meadows in southeastern counties of Minnesota. Butterflies pollinate flowers.

Is it edible or medicinal?
Not edible. It is a laxative and sedative and has been used internally for arthritis, headache, respiratory tract infections, and topically for sunburn. Flowers and roots contain flavonoids, glycosides, and saponins.

Has it any economic value?
No, except it is planted in gardens for early spring flowers. It blooms from

MNNPS Field Trips for 2016

Ken Arndt

2016 is going to be another great year for going on a MNNPS field trip. Attending one of the society's field trips is a great way to see some of Minnesota's many unique native plant communities as well as meeting others who share a similar interest in native plants. Currently we have twelve field trips that are planned for 2016 and are now open for registration. You can register for any of the field trips by visiting our website www.mnnps.org and going to the field trip page or by attending one of our monthly meetings where sign-up sheets will be available. Information for all of the field trips will be posted to the website regularly. Most trips have a limited number of registrants due to site sensitive areas that are encountered so registering early is encouraged.

The following is a list of MNNPS field trips planned so far for this year.

May 14th Minnesota Landscape Arboretum "Spring Wildflowers" with Shirley Mah Kooyman

May 21st Lost Valley Prairie SNA "Interpretive Hike and Volunteer Restoration Event" with Steve Poole and Jim Smetana

June 4th Grey Cloud Dunes SNA "Interpretive Hike with the Sierra Club" with Kelly Randall and Larry McCabe

June 5th Savage Fen SNA and Seminary Fen SNA "Fens, Sedges and Orchids" with Steve Eggers and Scott Milburn

June 5th & 6th Norris Camp and Red Lake WMA "Exploring the Peatlands of Northern Minnesota" with Malcom & Rosemary MacFarlane and John Arthur with other speakers/leaders TBA

June 12th Carpenter Nature Center "Early Summer Ravine and Cliff Plant Communities" with Jyneen Thatcher

June 18th Springbrook Nature Center "Dragonflies 101" with John Arthur

June 26th Quarry Park SNA "Bedrock Outcrops, Wet Meadow/Prairie and Oak Woodland/Forest Plant Communities" with Jyneen Thatcher and DNR representative TBA

July 9th Falls Creek SNA "Ferns in the Forest" with Barb Delaney

July 23rd Black Lake Bog SNA "A Focus on Updating and Expanding the Plant Species List for the SNA" with AmberBeth VanNingen

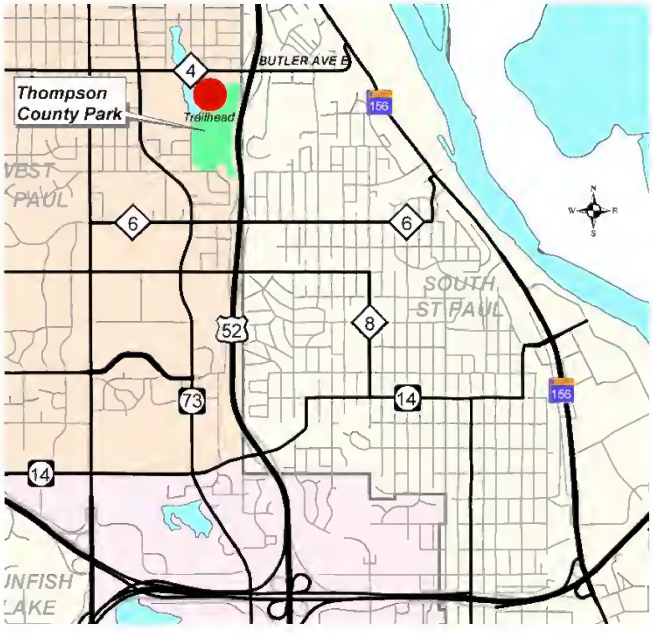
August 20th Larix Wildlife Management Area "Calcareous fens, Tamarack Seepage Swamps, and Rich Fens" with Steve Eggers and Scott Milburn

August 26th-28th Shalom Hill Farm "Prairie Perspectives 2nd Annual Retreat" with Marilyn Garber, Nancy Sather and Malcolm & Rosemary MacFarlane

Minnesota Native Plant Society
P.O. Box 20401
Bloomington, MN 55420

SPRING 2016

Dakota Lodge, Thompson County Park
1200 Stassen Lane, West St. Paul, MN 55113



Directions:
Take Highway 52 to the Butler Ave. E. exit in West St. Paul.
Go west on Butler 0.2 mile to Stassen Lane.
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Minnesota Plant Press

The Minnesota Native Plant Society Newsletter

www.mnnps.org

Volume 35 Numbers 2&3 **Fall–Winter 2016**

Minnesota Native Plant Society
A non-profit organization dedicated to the conservation and appreciation of Minnesota's native plants and plant communities through education and public awareness.

Monthly meetings

Thompson Park Center/Dakota Lodge
Thompson County Park
1200 Stassen Lane
West St. Paul, MN 55118

Meets are always the first Thursday of the month, October-December and February-June. Social period begins at 6:30 p.m. and the meeting runs from 7-9 p.m. Check at www.mnnps.org for more information.

Membership

The MNNPS membership year starts January 1st. Dues may be paid at the February meeting or mailed to P.O. Box 20401, Bloomington, MN 55420.

Membership categories are:
- Individual or family $15
- Student or senior $8
- Institution $20
- Donor $25
- Lifetime $300

Save the Date: 2017 Annual Symposium

The annual MNNPS symposium will be held on Saturday, April 1nd. The location this year will be at the Minnesota Landscape Arboretum due to the closing of the Bell Museum. A special thanks to David Remucal, Curator of Endangered Plants, for hosting us this year! We have a great line-up, exploring the subject of restoration, reintroduction, and recovery. A brochure with registration forms and information will be available soon, so please stay tuned and visit our website.

Monthly Programs – Fall 2016 - Spring 2017

October 6: Flora of Wisconsin's Interstate Park: Adventures and Discoveries in My Backyard, by Derek Anderson.

November 3: Local History and Science behind Eastern Hemlock, Minnesota's most endangered conifer, by Emily Ellingson.

December 1: A Look at the Gully 30 Calcareous Fen: Characterizing, Permitting, Constructing Through, and Monitoring a State Regulated Sensitive Wetland Resource, by Jim Arndt and Scott Milburn.

February 2: Ecology of Ordway Prairie, Minnesota, by Scott Zager.

March 2: Watching the Grass Grow; A Primer on Botanical Time-Lapse Imagery, by Steve Saupe.

MNNPS is a Volunteer Organization

You do not need to be a member of the board to contribute your time and skills. We always need field trip ideas and leaders as well as hospitality and logistics at monthly meetings. Ideas for monthly speakers are always welcome. Most importantly, we are still seeking a newsletter editor. The ideal person is someone who can write content consistent with our mission as well as to solicit writings from our membership. The newsletter is an integral and important part of the Society. It serves to not only inform our membership about the goings-on of the Society, but also educates the membership on plant related topics.

Society Leadership

Board members' names are followed with the year their term expires in parentheses.

President: Scott Milburn (2018)

Vice President: Welby Smith (2019)

Secretary: Mike Lynch (2017)

Treasurer & Membership: Ron & Cathy Huber

Board Member: Ken Arndt (2019)

Board Member: John Arthur (2018)

Board Member: Simba Blood (2019)

Board Member: Tom Casey (2017)

Board Member: Steve Eggers (2018)

Board Member: Otto Gockman (2017)

Field Trip Organizer: Ken Arndt

Conservation Chair: Tom Casey

Program Chair: Jyneen Thatcher

Symposium Chair: Otto Gockman

Website: Katy Chayka

Technical or Membership Inquiries:
contact@mnnps.org

MNNPS Board of Directors

We will be having board elections at the annual meeting which is the upcoming March monthly meeting. We currently have three open spots for those positions expiring this year. To be eligible to serve on the board, a person must be a member of the Society in good standing.

Photo of the MNNPS field trip to Seminary Fen in June, Photo courtesy of Steve Eggers.

Do you know your native dogwoods?

Welby Smith

If you spend much time outdoors in Minnesota you have probably learned to recognize red-osier dogwood (*Cornus sericea*). It's the wetland shrub with bright red winter twigs. Another native dogwood that people learn quickly is Pagoda dogwood (*Cornus alternifolia*). This one is more of a small tree than a shrub, and it has distinctly layered branches that make it look like a multi-tiered Japanese pagoda. Gray dogwood (*Cornus racemosa*) is another common shrub that occurs across most of Minnesota, but many people don't notice it until autumn when the leaves turn dark maroon.

Then there's bunchberry (*Cornus canadensis*) which is an ankle-high herbaceous plant rather than a shrub, but since it is in the genus *Cornus* I consider it an honorary dogwood. If you think you know your dogwoods then you might be thinking there are two left in Minnesota: round-leaved dogwood (*Cornus rugosa*) and silky dogwood (*Cornus amomum*).

That would have been true before this past summer when another species of dogwood was discovered in Minnesota; roughleaf dogwood (*Cornus drummondii*). It was found in Myre-Big Island State Park in Freeborn County, about 10 miles north of the Iowa border. I was with my friend Mark Widrlechner, a retired botanist from Iowa. Mark knew roughleaf dogwood from Iowa and had been telling me for years that I could find it in Minnesota, but I had just about given up looking. The species is well distributed in the eastern third of Iowa and has been documented from only two counties in neighboring Wisconsin. The species has no protected status in Wisconsin, but it tracked by the state.

As we worked our way through dense brushy thickets we examined every dogwood we came across. Most had been the ordinary gray dogwood, but then we came across something that was clearly different. I was momentarily puzzled—it was a dogwood, but it didn't match anything I had seen in Minnesota. Mark was the first to realize we had found what we were looking for. The first clue was provided by its common name – the leaves were indeed rough to the touch. The upper surface felt like sandpaper and the lower surface felt like velvet. Then everything else fell into place. So, next time you venture out in southern Minnesota, test the leaves of any unusual dogwood you encounter, and there is no telling what you might find.

So what's a "warm-season" grass anyway?

Rhett Johnson

Before answering that question, it is important to note that plants need three things above all others: sunlight energy, water, and carbon dioxide. Sunlight warms plant leaves making them lose more water; plants get CO_2 through tiny holes in their surfaces called stomata and generally lose additional water in the process. So really, plants need to balance gaining energy (and heating), losing water, and gaining CO_2 in order to grow optimally.

So, what does "warm-season" mean? Some species of grasses (and other plants, in about 17 families) have developed a means of overcoming a physiological problem with photosynthesis. A very important enzyme, Rubisco, is the molecule that basically attaches a carbon dioxide molecule to a carbon chain to start the process of making sugar molecules (through an amazingly complex chain of reactions). During photosynthesis, plants also split water molecules and release oxygen, which builds up in their tissues if it can't diffuse out quickly enough. The problem is, when the oxygen levels in plant cells get too high, the oxygen binds up the Rubisco and the plant has to spend energy cleaning it up (this process is called photorespiration and reduces the efficiency of photosynthesis by up to 50%). This inefficiency is eliminated in warm-season plants (also called C_4 plants), which have developed specialized tissues and additional enzymes that enable the plants to actively concentrate carbon dioxide into the cells where they keep their Rubisco. This is a big advantage in warm, dry environments where water loss usually limits gas exchange and leads to high cellular oxygen levels. It is also advantageous in low nutrient environments because C_4 plants need much less Rubisco, and building Rubisco molecules takes a lot of nitrogen. The downside for C_4 plants is that concentrating the CO_2 takes some energy, so it is not advantageous in habitats where photorespiration is not a big problem.

These adaptations have direct implications for managing grasslands. For example, warm-season plants can generally handle dry, warm conditions better than cool-season species (also called C_3 species), so they grow later in the season. Management that includes early or very late season disturbance (such as fire or grazing) will hinder cool-season species (such as smooth brome (*Bromus inermis*) and Kentucky bluegrass (*Poa pratensis*)) and favor warm-season species including big bluestem (*Andropogon gerardii*) and Indian grass (*Sorgastrum nutans*). Also, nitrogen additions (such as fertilizer) will favor cool-season species by allowing them to produce additional Rubisco—in other words, fertilizing prairie will favor non-native cool-season grasses. Climate change will likely impact grasslands as well, although the results are difficult to predict. Though the increase in atmospheric CO_2 might be a boon to cool-season species, this may be balanced by anticipated increased temperatures and drought. The verdict is still out on this issue.

It is interesting to think of how something that takes place on a molecular scale has such a bearing on what we encounter in managing prairies. It is also interesting to think that the C_4 photosynthetic pathway is thought to have originated in the grasses about 25-32 million years ago (for certain by 12.5 MYA based on fossils), with C_4 grasslands greatly expanding by 5 million years ago. C_4 pathways occur in 17-19 plant families and are thought to have independently evolved 40 to 60 times in different plant lineages, which shows how advantageous it is for plants to overcome photorespiration. The environmental drivers of this evolution included extended global warm periods, extended droughts, and also such things as continental shifts that brought monsoon cycles and the rise of the Himalayan Mountains and other mountain ranges (the degradation of fresh silicate rocks takes up a lot of CO_2, depleting the atmospheric CO_2 concentration).

The whole problem of photorespiration probably traces back to the evolution of photosynthesis in bacteria about 2.7-3.5 billion years ago when the atmosphere contained very little oxygen (the bacteria that put the O_2 into the atmosphere also put the iron in Northern Minnesota). While we are on interesting tidbits, only about 1-2% of plant species have the C_4 pathway, but about half of grasses and sedges do, and C_4 species contribute about 25% of global primary productivity and much of the world's food supply (largely from corn/maize).

Sometimes we can become myopic when viewing and managing prairies, but what we experience on the prairie today is the result of processes at many different scales of space and time. It is really amazing how so many factors have led to the prairies we have today, and further emphasizes the importance of retaining the remaining prairie lands and managing them to preserve their diversity and structure.

What is the creepiest plant or fungus?

Stephen G. Saupe

There are lots of good candidates including witch's butter (*Tremella mesenterica*), dead man's fingers (*Xylaria polymorpha*), Jack-O-Lantern mushrooms (*Omphalotus olearius*), and the ghost plant (aka Indian pipe, *Monotropa uniflora*). My vote is for a parasitic fungus with a benign name but a rather gruesome appearance, cedar-apple rust (*Gymnosporangium juniperi-virginianae*).

At its creepiest prime, cedar-apple rust reminds me of a brain that has exploded with tubes of orange gelatinous goo protruding in every direction.

The gelatinous tubes are actually one of the reproductive structures of the cedar-apple rust fungus. They produce tiny, seed-like structures called spores that are carried by the wind to an apple tree. The fungus emerges from the spores and infects the leaves forming bright orange circular lesions on the upper side of the leaves.

The fungus eventually grows through the leaf and erupts through the bottom releasing another crop of spores. This time the wind carries the spores back to an eastern red-cedar tree (*Juniperus virginiana*).

The spores germinate on the eastern red-cedar and then over the course of several months the fungus that emerges grows into a structure, called a gall, which looks like a reddish-brown brain. The surface is dimpled like a golf ball. These brain-like galls can grow to the size of a ping-pong ball, though most are closer to grape size.

The fungus overwinters in the galls. Then, in early spring the gelatinous tubes erupt through the dimples and release spores to complete the life cycle.

Thus, cedar-apple rust infects two different plants – apples and eastern red-cedar. The fungus doesn't normal kill either of its hosts, but it can significantly reduce apple yields and cause misshapen cedar trees.

To minimize infection in your apple orchard, you can cut down nearby eastern red-cedar trees. This will disrupt the life cycle. Unfortunately, the spores can travel great distances so it is not a particularly effective control method.

If you want to collect some of the galls to decorate for Halloween, you can find eastern red-cedars growing in old-fields, roadsides, and gravelly areas. The trees are particularly common in the southern half of Minnesota.

Eastern red-cedar produces a bluish, berry-like cone that is dispersed by birds. The ones that the birds don't eat can be harvested to flavor gin.

The wood is very aromatic. It is reminiscent of a hamster cage. That's because the shavings are often used for bedding.

The volatile chemicals that give the wood its odor repel insects and provide resistance to wood-rotting fungi. This explains why eastern red-cedar wood can be used to line blanket chests and dresser drawers and also why it is a very long-lived tree. In fact, one more than 475 years old has been reported in Virginia.

Prairie Perspectives Retreat Notes

Dianne Rowse

The second annual Prairie Perspectives Retreat was a treat for the senses. Co-led by Nancy Sather, Ecologist with the DNR, and Marilyn Garber, Director of the Minnesota School for Botanical Art, it was a unique combination of prairie field trips and botanical art enjoyed by about 30 participants. The lodging was at the sustainably designed Shalom Hill Farm Retreat Center near Windom, and food preparation was led by Rosemary MacFarlane. Participants were from the Minnesota Native Plant Society and the Minnesota School for Botanical Art, and there was great sharing of knowledge and experience. The difficult thing was having to choose between prairie trips with Nancy and hands-on art with Marilyn!

On Friday, I went with Nancy's group to explore Red Rock Prairie/Nature Conservancy, the best dry-mesic prairie in the area. It is across the road from Jeffers Petroglyphs. We saw small-flowered fameflower, *(Phemeranthus parviflorus)*, with tiny pink flowers that open at 4:00 p.m., rock spikemoss *(Selaginella rupestris)*, 2 species of prickly pear *(Opuntia fragilis* and *O. macrorhiza*), the Federally listed threatened prairie bush clover *(Lespedeza leptostachya)* and other species adapted to growing in dry conditions on shallow soil over the exposed bedrock. Nancy noted that Minnesota prairies in the fall feature the University of Minnesota colors, maroon and gold.

Contd. from page 4

Another group went to Cottonwood River Prairie SNA. Both trips included examples of morphological adaptations of plants to site conditions, an important detail to consider when selecting a representative plant to draw.

Back at Shalom Hill, Marilyn taught drawing and watercolor. The group selected apples from a tree in the yard, and they created marvelous botanical watercolor paintings.

Evenings included presentations about the English botanical art of Beatrix Potter (of Peter Rabbit fame) and Franz Bauer (the first botanical artist of the Kew Gardens), natural dyes, twining (rope-making with plant fibers), weaving, photographing fungi, and dragonflies.

The other field trips I went on were at String Lake Waterfowl Production Area, a calcareous fen, and a private wet mesic prairie near Mountain Lake. Rhett Johnson, MN DNR grass specialist, gave us a wonderful introduction to grass morphology and identification before we headed out to String Lake. Interesting plants at String Lake included Loesel's twayblade (*Liparis loeselii*), false gromwell *(Onosmodium molle),* Plains muhly *(Muhlenbergia cuspidata),* gray goldenrod *(Solidago nemoralis),* Scribner's panic grass *(Dicanthelium* sp.*),* and prairie sandreed *(Calamovilfa longifolia).*

At the Mountain Lake site, plants included Sullivant's Milkweed *(Asclepias sullivantii)* and Great Plains ladies'-tresses *(Spiranthes magnicamporum).*

On Saturday evening, we had a botanical art show, including works that people did this weekend as well as works they brought to the retreat. A few people brought art they created for the Eloise Butler Wildflower Garden Florilegia, a collection of watercolor paintings accurately documenting the wildflowers in the garden. These were breathtaking!

Thank you to all who helped make this Society retreat a success. See you there next year!

President's Column

Scott Milburn

Much has happened since our last newsletter. Of major note is that we had a presidential election in the U.S. that will undoubtable bring change. The Society has also had a change of sorts in terms of officers. Michael Lynch is now serving as the secretary, Welby Smith is vice president, and I am serving as president after a two year break. I would like to thank Michael for his contributions during this time. I would also like to note that Ron and Cathy Huber are still serving as the treasurer and membership chairs for the Society. We are extremely indebted to them for their service during their tenure over the last decade.

In other news, most of you are aware that the old Bell Museum in Minneapolis is closed. That means we need a new temporary home to host our annual symposium which is scheduled for April 1, 2017. Fortunately, David Remucal, Curator of Endangered Plants at the Minnesota Landscape Arboretum has paved the way for the event to take place at the Arboretum. This year's theme deviates from the past formula, but it will still be a very intriguing and educational event. The focus this year will be restoration, from large systems to the species level. The work being done is positive, but we need to always emphasize the importance of preservation in the first place.

I would also like to mention the addition of two new board members this past year, Simba Blood and Tom Casey. Simba will be helping with our social media outreach including our Facebook page. Tom is now serving as the Conservation Committee chair and he brings with him his experience as an attorney. We are looking to grow this committee under the leadership of Tom. What we need is for folks to step up that have the time to attend events and hearings at the state capitol. We also need to have committee members that are able to track legislation, both positively and negatively, that is of interest to the Society and within the bounds of our mission.

More on our new board members: Simba joined the board this past year. She came to an appreciation

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of native plants through a somewhat circuitous route. After working in several completely unrelated fields, she returned to college to complete her degree. Simba was particularly interested in the effects of man-made compounds in aquatic systems, and thought a career in research would be great.

While in school, she was able to take both ecology and plant biology at the Itasca Biological Field station. It was through this experience that Simba started to recognize that she really liked learning about plants.

After graduating with a BS in Ecology, Simba applied for an internship at the Ramsey-Washington Metro Watershed District to see what hands-on management was like. Turns out that working most days restoring native wetland and upland habitats is about the best job ever according to Simba. She has now been with the District for 16 years.

One of the things she greatly appreciates about the Society is the opportunity to deepen her knowledge of the plants that she is familiar with and the opportunity to become acquainted with plants outside of her everyday sphere. In joining the board, she hopes to be able to share her enthusiasm with folks from lots of different backgrounds as she continues to learn about the intricacies of our native ecosystems.

The other new board member, Tom Casey, has been a practicing attorney for over 40 years, with a focus on conservation, sustainable development, and renewable energy initiatives. He has represented hundreds of clients in their efforts to: conserve and protect our natural, archaeological, cultural, and historical resources; promote sustainable development, stop urban sprawl, and oppose big-box development; and advance sustainable energy and oppose the expansion of nuclear power and other non-sustainable energy sources. Tom is also a member of the Minnesota State Bar Association's Environmental, Natural Resources, and Energy Law Section.

He has a long list of community service including: founding board member and present Chair of Friends of Minnesota Scientific and Natural Areas; the Minnesota Association of Watershed District's Legislative/Policy Committee; Minnehaha Creek Watershed District's Citizens Advisory Committee; Rule-Making Task Force; Aquatic Invasive Species Task Force; and received a Watershed District "Hero" award; the Metropolitan Council's Permanent Agriculture Task Force; City of Mound Park and Open Space Commission.

In his spare time, Tom loves to study natural history. He is a Minnesota Master Naturalist and an avid nature photographer, who has presented slide/lectures on: The Mountain Gorillas of Rwanda; The Animals and Conservation Issues of East Africa; The Natural History of Australia and New Zealand; and The Polar Bears of Hudson Bay. His photography trips have also taken him to Brazil, Ecuador and the Galapagos Islands, Costa Rica, and throughout North America.

Tom emphasizes that he is honored to be appointed as Chair of our re-organized Conservation Committee. Tom welcomes suggestions for our conservation priorities.

Plant Lore

Thor Kommedahl

What is rattlebox?

It is *Crotalaria sagittalis*, a native plant in the pea family.

What do its names mean?

Crotalaria means "rattle" referring to seeds within an inflated seed pod (the rattlebox). *Sagittalis* means arrow shaped, referring to the stipule shape.

What does the plant look like?

It is an annual, identifiable by arrow-shaped stipules that point down the stem and seeds that rattle in the black pods when mature. Winds blow the inflated seed pods to facilitate seed dispersal. The yellow, pea-like flowers bloom from June to September.

Where does the plant grow?

Rattlebox plants grow along the Wisconsin-border counties in southeast Minnesota. It grows on dry, open soil and wasteland.

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Is the plant medicinal or poisonous?

Not medicinal but this and other *Crotalaria* species cause cirrhosis of the liver in horses that graze on it and the disease is known as "walkabout."

Has it any useful properties?

The poisonous seeds, boiled or roasted long enough, make a tasty substitute for coffee.

***Crotalaria sagittalis*, Image courtesy of Minnesota Wildflowers**

Umbilicaria mammulata

Otto Gockman

The lichen genus *Umbilicaria* is widespread in cool portions of the world as well as in arctic and alpine regions. Minnesota is home to eight (possibly nine) species of *Umbilicaria*, all of which are typically found in the northeastern portion of the state. The genus is characterized by a rounded thalus (lichen body) of varying size, with a central attachment point to its substrate, an umbilicus, which holds the lichen close to the rock on which it grows.

This species is a large and fairly charismatic lichen which is common in much of eastern North America. It can be distinguished from the other species of *Umbilicaria* in Minnesota with the following combination of traits: The upper surface of the talus is brown (greenish when wet) without much, if any, white pruina, the lower surface is densely covered by small black rhizines (root-like structures) which give it a velvety appearance, and the species very rarely produces apothecia (disk-shaped fruiting bodies) which manifest as black structures on the upper surface of the lichen thalus. Additionally, *U. mammulata* is the largest species of this genus in the state with thali that can reach upwards of a foot across!

In Minnesota, the species typically occurs on shaded rock outcrops in the Arrowhead, where cool temperatures and high humidity create the ideal environment for this lichen. When the species is present in an area it often covers the rocks on which it

***Umbilicaria mammulata*, Image courtesy of Otto Gockman.**

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occurs. Though the species is much more common in the northeast there are two noteworthy "disjunct" occurrences further south in the state. These are at Banning State Park in Pine County and Interstate State Park in Chisago County. It is noteworthy that the species has not been documented from the Paleozoic Plateau (Driftless Region) of Minnesota, where sandstone would be the likely substrate. In Wisconsin, this species is found in portions of Grant and Richland Counties which both include portions of this large geologic feature.

I encourage MNNPS members to get out and explore our lichens, particularly as a way to get out during the winter months. If you get to the southeastern corner of the state keep an eye out for *Umbilicaria mammulata*. Though it is not particularly rare, it would be great to expand the known range of this unmistakable species within Minnesota.

Fens in the Lower Minnesota River Valley: MNNPS Field Trip to Savage Fen and Seminary Fen Scientific and Natural Areas

Steve Eggers

On June 5th 2016, thirteen participants enjoyed a day of fens, orchids and sedges as well as a first-hand look at recent management activities by the Minnesota Department of Natural Resources. First was Savage Fen SNA in Scott County where we discussed the characteristics of a "calcareous fen"—a groundwater-fed, seepage wetland on sloping or mounded organic soils where the groundwater is rich in calcium and magnesium bicarbonates, and sometimes calcium and magnesium sulfates as well. These calcareous fens are included under OPp93 (Prairie Extremely Rich Fen) of the Minnesota Native Plant Community Classification System. Larissa Mottl described the management activities already implemented and what is planned. Cutting of shrubs, primarily buckthorns (*Frangula alnus, Rhamnus cathartica*), had been done during winter 2015-2016. In places the buckthorn cover had been so dense as to preclude any herbaceous species. During our field trip we observed saturated soils now with full sun exposure and already showing a positive response by sedges and native forbs colonizing what had been bare soils with only buckthorn leaf litter.

Future plans include prescribed burns as well as surgical application of herbicide (eye-dropper application) on cut stems of common reed (*Phragmites australis*) on the edges of the large colonies of *Phragmites* invading calcareous fen plant associations.

We then travelled the short distance to Seminary Fen SNA in Carver County. A prescribed burn had been conducted a year previous so we could observe the one-year, post-burn results. The burn had successfully set-back buckthorn and created fresh germination/colonization microhabitats for native fen species. Extensive cutting of large buckthorn shrubs had also been conducted.

The highlight of the field trip was seeing and identifying sedges, for which the timing of the field trip was specifically targeted. We identified 14 species of *Carex* (**Table 1**) as well as hardstem bulrush (*Schoenoplectus acutus*), narrow-leaf cottongrass (*Eriophorum angustifolium*), twig-rush (*Cladium mariscoides*) and flat-stem spike-rush (*Eleocharis compressa*). These fens could be the most sedge-rich habitats in the Twin Cities metropolitan area. Unfortunately, the white lady's-slippers (*Cypripedium candidum*) were past blooming but we did find the northern, small yellow lady's-slipper (*C. parviflorum* var. *makasin*) in bloom at Seminary Fen SNA. Also in bloom were golden ragwort (*Packera aurea*) and spring cress (*Cardamine bulbosa*). Seven state-listed special concern or threatened species occur in these SNAs of which we saw four: white lady's-slipper, sterile sedge, twig-rush and common valerian (*Valeriana edulis* var. *ciliata*).

It is remarkable that these large (each wetland complex is several hundred acres in size), sloping, groundwater-fed peatlands and associated diverse native flora have managed to survive within a highly urbanized landscape. Much work remains in the way of continued invasive species control, prescribed burns, and maintaining to even restoring groundwater flows by reducing high capacity well withdrawals from the aquifer that feeds the fens. Many thanks to the Minnesota DNR for its active role in managing these SNAs and MNNPS members should look for volunteer work days for opportunities to pitch in and assist with

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TABLE 1	
Common Name	**Scientific Name**
Common Wood Sedge	*Carex blanda*
Buxbaum's Sedge	*Carex buxbaumii*
Limestone Meadow Sedge	*Carex granularis*
Porcupine Sedge	*Carex hystericina*
Inland Sedge	*Carex interior*
Lake Sedge	*Carex lacustris*
Wiregrass Sedge	*Carex lasiocarpa*
Woolly Sedge	*Carex pellita*
Prairie Sedge	*Carex prairea*
Sartwell's Sedge	*Carex sartwellii*
Tussock Sedge	*Carex stricta*
Sterile Sedge (T)	*Carex sterilis*
Stalk-grain Sedge	*Carex stipata*
Common Stiff Sedge	*Carex tetanica*

Scientific and Natural Areas Profile
Sugarloaf Point SNA

Scott Milburn

Sugarloaf Point SNA is probably very well known to those who travel along State Highway 61. The SNA is just south of Finland State Forest in Cook County, Minnesota. The area was originally homesteaded in 1889 by a Norwegian immigrant. Eventually his family sold the property to a paper company in the 1940s. Following this transaction much of the forested areas were logged while the portion of the property along the shore of Lake Superior was used as a landing area for the pulpwood. The land was then donated to The Nature Conservancy in the mid-1980s. The state went on to purchase over half of the donated land from The Nature Conservancy around that time. Then in 1992, a 3.5 acre segment of the State owned portion was officially designated as a Scientific and Natural Area. This was due to the unique geology which was the result of volcanic activity, glacial influences, and natural erosional processes. Additional acreage has since been added to SNA with the remaining acreage then donated to Sugarloaf Interpretive Center Association which is now the North Shore Stewardship Association.

What is appealing about the site is the magnificent view of Lake Superior and it serves as an excellent distraction from everyday life. There is not a tremendous amount of vegetative diversity associated with the point itself, but there are a few species worth pointing out. The Panicled bluebells (*Mertensia paniculata*) is present throughout the summer, but best to catch in bloom during June. This is the northern relative to the showy Virginia bluebells (*M. virginica*). Another interesting species is the shrub ninebark (*Physocarpus opulifolius*), a member of the rose family. The common name itself is based on the exfoliation of the outer layers of bark that ultimately reveals the inner bark as the branches mature. Another member of the rose family that you can see if you look hard enough is the three-toothed cinquefoil (*Sibbaldiopsis tridentata*). Also present is the hairy goldenrod (*Solidago hispida*). This is a species with distribution throughout the forested provinces of the state, but it is commonly found along the North Shore. The site is worth a visit and provides an opportunity to stretch one's legs.

Sugarloaf Cove SNA, Image courtesy of Scott Milburn.

Minnesota Native Plant Society
P.O. Box 20401
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FALL-WINTER 2016

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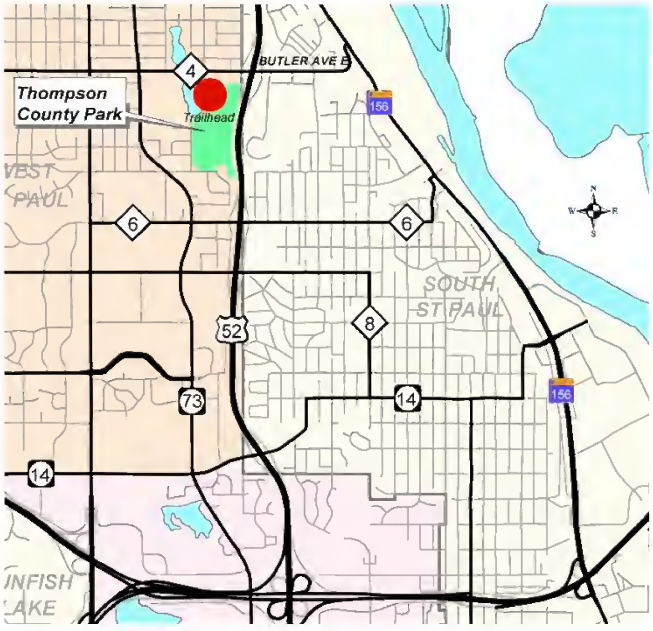

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